

# Ali Kuwajerwala

M.Sc. Candidate, University of Montréal & Mila

[alihusein.kuwajerwala@umontreal.ca](mailto:alihusein.kuwajerwala@umontreal.ca) | [linkedin.com/in/alihkw](https://linkedin.com/in/alihkw) | [github.com/alik-git](https://github.com/alik-git) | [alihkw.com](https://alihkw.com)

Actively seeking internship/full-time opportunities for the summer of 2023, and beyond.

## EXPERIENCE

### Applied Scientist Intern, Amazon

Summer 2022

*Alexa AI Team, Amazon Devices*

*(Toronto, ON)*

- Improved the accuracy of the conversational **NL2SQL** system by **1.5%** on the **Spider** NL2SQL dataset.
- Prototyped alternative model architectures to overcome the 512 token length limitation in existing models.
- Streamlined the team's **AWS** model development cycle by automating several processes in the codebase.

### Machine Learning/Software Engineer, Liquid Analytics (Startup)

Summer 2021

*Perform AI Application, Core Algorithms Team*

*(Remote, US)*

- Developed highly scalable algorithms in **Julia** to quickly process logistics data for large distribution companies.
- Set up queuing infrastructure using **AMQP** and **RabbitMQ** to handle upto 300,000 requests each second.
- Deployed **AWS** services to efficiently host our software in the cloud, simplifying the CI/CD pipeline.

### Robotics Researcher, RVL Lab

Sep. 2020 – Apr. 2021

*Robot Vision and Learning Lab, University of Toronto*

*Toronto, ON*

- Developed novel data augmentation techniques for improved autonomous driving performance in mobile robots.
- Responsibilities: data collection, performing simulation experiments, designing/debugging the ANN architectures.
- Performed real robot experiments with a Husky robot; including sensor setup and **ROS** Node configuration.
- Joint first author for the paper: Sharma D, **Kuwajerwala A**, Shkurti F. *Augmenting Imitation Experience via Equivariant Representations*. [arxiv.org/abs/2110.07668](https://arxiv.org/abs/2110.07668) (**Accepted @ ICRA 2022**)

### Software Developer, EPSON

Jul. 2018 – Apr. 2019






*Machine Vision Team, Robotics Department, EPSON Canada*

*Markham, ON*

- Developed 3D object detection and pose estimation technologies for commercial bin picking robots.
- Automated evaluation tasks using **Python** and **Bash**, increasing (upto 5x) the amount of tasks run each day.
- Evaluated and debugged algorithms, analyzed research results to diagnose and fix detection/estimation issues.

## PROJECTS

*All code available on Github – click the links below!*

Model Based RL for Autonomous Driving   <i>Python, PyTorch, OpenAI Gym</i>		Dec. 2021
Modelling Uncertainty in Neural Networks   <i>Python, PyTorch</i>		Dec. 2021
Backwards Reachability Analysis Tutorial   <i>Matlab</i>		Dec. 2020
Feature Visualization for ANNs (Workshop)   <i>Jupyter Notebook, Python, Tensorflow</i>		Dec. 2019
NeoCirkuits (Android App)   <i>Java, Android Studio</i>		Summer 2018

## EDUCATION

### University of Montréal & Mila (Currently Enrolled)

*M.Sc, Computer Science (Robotics and Artificial Intelligence)*

*Sep. 2021 – May 2023*

- Supervisor:** Prof. Liam Paull, director of the Montreal Robotics and Embodied AI Lab.
- Preprint:** *ConceptFusion: Open-set Multimodal 3D Mapping* **Link:** [concept-fusion.github.io](https://concept-fusion.github.io)

### University of Toronto

*H.B.Sc, Computer Science & Math CGPA: 3.63*

*Sep. 2016 – May 2020*

- Award:** Received the NSERC Undergraduate Student Research Award, a value of \$5600. (2020)
- Extracurricular:** Co-Founder & Head of Operations of the Robotics Club. (2019-2020)
- Teaching Assistant:** Mobile Robotics (CSC477), Data Structures (CSC263), Theory of Computation (CSC236).

## TECHNICAL SKILLS

**Languages:** Python, Julia, C/C++, Java, SQL

**Developer Tools:** Git, ROS, Amazon Web Services, OpenAI Gym, Android Studio, CUDA, ssh, VNC

**Libraries:** PyTorch, Tensorflow, OpenCV, pandas, NumPy, scipy, Matplotlib, Plotly